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25 (amended). A monoclonal antibody or recombinant antibody fragment which binds a human gamma-carboxylated osteocalcin fragment, wherein said monoclonal antibody or recombinant antibody fragment has the specificity to epitopes that have been identified on said gamma-carboxylated fragment of osteocalcin, said osteocalcin fragment selected from the group consisting of

- i) a fragment which spans from amino acid in position 7 to amino acid in position 30 of the amino acid sequence set forth in SEQ ID NO:2 in which all three glutamic acids in positions 17, 21 and 24 of said sequence are gamma-carboxylated, and
- ii) a fragment which spans from amino acid in position 6 to amino acid in position 30 of the amino acid sequence of SEQ ID NO:2 in which all three glutamic acids in the positions 17, 21 and 24 of said sequence are gamma-carboxylated.

26 (amended). A non-competitive immunoassay for quantitative determination of a gamma-carboxylated osteocalcin fragment in a sample comprising contacting the sample with two monoclonal antibodies or recombinant antibody fragments which bind said osteocalcin fragment, measuring bound monoclonal antibody or recombinant antibody fragment, and comparing said amount with an amount measured in a sample having a known quantity of said osteocalcin fragment, wherein said monoclonal antibody or recombinant antibody fragment has the specificity to epitopes that have been identified on said gamma-carboxylated fragment of osteocalcin, said osteocalcin fragment selected from the group consisting of

- i) a fragment which spans from amino acid in position 7 to amino acid in position 30 of the amino acid sequence set forth in SEQ ID NO:2 in which all three glutamic acids in positions 17, 21 and 24 of said sequence are gamma-carboxylated, and

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ii) a fragment which spans from amino acid in position 6 to amino acid in position 30 of the amino acid sequence of SEQ ID NO:2 in which all three glutamic acids in the positions 17, 21 and 24 of said sequence are gamma-carboxylated.
